25. (Canceled) A processing system for a substrate, said system comprising:

a body defining a processing chamber;

a holder disposed within said processing chamber to support said substrate;

a gas delivery system in fluid communication with said processing chamber;

a first temperature control system in thermal communication with said processing chamber;

a pressure control system in fluid communication with said processing chamber;

a controller in electrical communication with said gas delivery system, said temperature control system, and said pressure control system; and

a memory in data communication with said controller, said memory comprising a computer-readable medium having a computer-readable program embodied therein, said computer-readable program including a first set of instructions for controlling said gas delivery system to deposit, onto said substrate, monolayers from a first reactive gas comprising fluorine and a second reactive gas, with each of said first and second reactive gases being introduced into said processing chamber with a carrier gas, and a second set of instructions to control said gas delivery system to control a quantity of fluorine associated with the monolayers by introducing, into said processing chamber, hydrogen (H_2) as a carrier gas along with said first and second reactive gases.

REMARKS

This is intended as a full and complete response to the Final Office Action dated December 24, 2002, having a shortened statutory period for response set to expire on March 24, 2003. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-25 are pending in the application. Claims 1-20 and 22-25 stand rejected. Claim 21 is objected to.

Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants note that former claim 21 was

dependent upon former claim 6, which was dependent on former claim 3. However, former claim 6 should have been dependent on former claim 5, which provides antecedent basis for the "purging" in claim 6. Applicants have amended claim 1 to include the limitations of claims 5, 6, and 21 and have canceled claims 5, 6, 9, 11, 14-22, and 24-25. Applicants have amended claims 10 and 23 to include introducing a purge gas, wherein the purge gas and carrier gas have differing constituents. Applicants have amended claims 7, 8, and 12 as to matters of form. Applicants submit that the changes made herein do not introduce new matter. Applicants respectfully request allowance of claim 1 and of claims 2-4 and 7-8, which depend thereon. Applicants respectfully request allowance of claims 10, 12, and 23.

Claims 1-15 and 22-24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2001/400441250 to *Werkhoven, et al.* As discussed above, Applicants have amended claim 1 to recite a method for forming a layer on a substrate that includes the use of a purge gas and a carrier gas that have differing constituents. While the Examiner states that the purge gas and carrier gas have identical or differing constituents, as each are selected from the same group of compounds, and refers to paragraph 65 of *Werkhoven, et al.*, Applicants submit that paragraph 65 of *Werkhoven, et al.* only describes using a continuous flow of carrier gas to purge the chamber. *Werkhoven, et al.* does not teach or suggest a method for forming a layer on a substrate that includes the use of a purge gas and a carrier gas that have differing constituents. Thus, *Werkhoven, et al.* does not teach, show, or suggest a method for forming a layer on a substrate disposed in a processing chamber, said method comprising chemisorbing onto said substrate alternating monolayers of a first compound and a second compound, with said second compound having fluorine atoms associated therewith, with each of said first and second compounds being introduced into said processing chamber along with a carrier gas, purging said processing chamber following chemisorption of each of the alternating monolayers, wherein the purging said processing chamber includes introducing a purge gas therein, and controlling a quantity of said fluorine atoms associated with the monolayer of said second compound as a function of said carrier gas, wherein the purge gas and the carrier gas have differing constituents, as recited in amended claim 1. Applicants

respectfully request withdrawal of the rejection of claim 1 and of claims 2-4 and 7-8, which depend thereon.

Furthermore, *Werkhoven, et al.* does not teach, show, or suggest a method for forming a layer on a substrate disposed in a processing chamber, said method comprising serially exposing said substrate to first and second reactive gases, with said first reactive gas having a first compound associated therewith and said second reactive gas having a second compound associated therewith, to form alternating monolayers of said first compound and said second compound, with said second compound having fluorine atoms associated therewith, controlling a quantity of said fluorine atoms associated with the monolayer of said second compound by introducing into said processing chamber a carrier gas along with said first and second reactive gases, and purging said processing chamber following chemisorption of each of the alternating monolayers by introducing a purge gas, wherein the purge gas and the carrier gas have differing constituents, as recited in amended claim 10. Applicants respectfully request withdrawal of the rejection of claim 10 and of claims 12 and 13, which depend thereon.

Furthermore, *Werkhoven, et al.* does not teach, show, or suggest a method for forming a layer on a substrate disposed in a processing chamber, said method comprising serially exposing said substrate to first and second reactive gases to deposit monolayers on the substrate, with said first reactive gas having fluorine atoms associated therewith, controlling a quantity of said fluorine atoms associated with the monolayers by introducing into said processing chamber hydrogen (H_2) as a carrier gas along with said first and second reactive gases, and purging said processing chamber following deposition of each of the monolayers by introducing a purge gas, wherein the purge gas and the carrier gas have differing constituents, as recited in amended claim 23. Applicants respectfully request withdrawal of the rejection of claim 23.

Claims 16-20 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Werkhoven, et al.* in view of Japanese Patent No. 03056678 to *Tazaki.* Applicants have canceled claims 16-20 and 25.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the method or apparatus of the present invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A method for forming a layer on a substrate disposed in a processing chamber, said method comprising:

chemisorbing onto said substrate alternating monolayers of a first compound and a second compound, with said second compound having fluorine atoms associated therewith, with each of said first and second compounds being introduced into said processing chamber along with a carrier gas;

purging said processing chamber following chemisorption of each of the alternating monolayers, wherein the purging said processing chamber includes introducing a purge gas therein; and

controlling a quantity of said fluorine atoms associated with the monolayer of said second compound as a function of said carrier gas, wherein the purge gas and the carrier gas have differing constituents.

2. (Amended) The method of claim 1 wherein controlling said quantity of said fluorine atoms further [including] includes selecting said carrier gas from a group of gases consisting of nitrogen (N_2), argon (Ar), hydrogen (H_2).

7. (Amended) The method as recited in claim [3] 1 wherein purging said processing chamber includes pumping said processing chamber to evacuate all gases disposed therein.

8. (Amended) The method as recited in claim [3] 1 wherein purging of said processing chamber includes [introducing a purge gas therein and subsequently] pumping said processing chamber clear of all gases disposed therein after introducing the purge gas.

10. (Amended) A method for forming a layer on a substrate disposed in a processing chamber, said method comprising:

serially exposing said substrate to first and second reactive gases, with said first reactive gas having a first compound associated therewith and said second reactive gas having a second compound associated therewith, to form alternating monolayers of said first compound and said second compound, with said second compound having fluorine atoms associated therewith;

controlling a quantity of said fluorine atoms associated with the monolayer of said second compound by introducing into said processing chamber a carrier gas along with said first and second reactive gases; and

purging said processing chamber following chemisorption of each of the alternating monolayers by introducing a purge gas, wherein the purge gas and the carrier gas have differing constituents.

12. (Amended) The method as recited in claim [11] 10 wherein purging said processing chamber includes pumping said processing chamber to evacuate all gases disposed therein.

23. (Amended) A method for forming a layer on a substrate disposed in a processing chamber, said method comprising:

serially exposing said substrate to first and second reactive gases to deposit monolayers on the substrate, with said first reactive gas having fluorine atoms associated therewith;

controlling a quantity of said fluorine atoms associated with the monolayers by introducing into said processing chamber hydrogen (H_2) as a carrier gas along with said first and second reactive gases; and

purging said processing chamber following deposition of each of the monolayers by introducing a purge gas, wherein the purge gas and the carrier gas have differing constituents.